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THREE NEW STOMATOPOD CRUSTACEANS
FROM THE INDO-MALAYAN AREA

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In his monograph on the Indo-West Pacific stomatopods, Kemp (1913) noted that Lanchester's (1901) record of *Chloridella chlorida* from the Malay Peninsula was probably incorrect. In April 1967, I had the opportunity to visit the Museum of Zoology, Cambridge, England, and examine that specimen as well as the small series of specimens which Lanchester reported as *Lysiosquilla spinosa*. Both lots represent undescribed species which are described and illustrated herein.

Among the unidentified stomatopods in the collection of the Division of Crustacea, U.S. National Museum are two specimens representing two new species of *Clorida*. One of these specimens is conspecific with the specimen Lanchester recorded from the Malay Peninsula while the other belongs to another undescribed species, characterized below.

I am indebted to Dr. C. B. Goodhart and Dr. K. A. Joysey for their assistance during my visit to Cambridge and for the loan of the specimens. The illustrations were made by my wife, Lilly. Support of this study by the Office of Oceanography and Limnology, Smithsonian Institution, is gratefully acknowledged.

In the descriptive accounts, TL refers to Total Length and CL to Carapace Length. Other terms have been defined in earlier papers (Manning, 1966, 1968).

***Austrosquilla malayensis* new species**

Figure 1

Lysiosquilla spinosa.—Lanchester, 1901, p. 554 [not *L. spinosa* (Wood-Mason, 1875)].

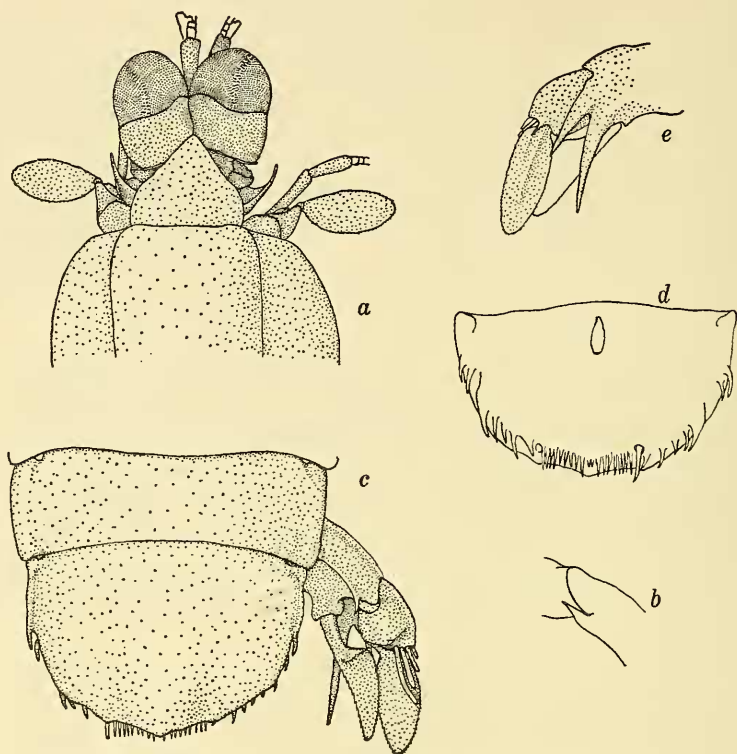


FIGURE 1. *Austrosquilla malayensis* new species, male holotype: *a*, anterior portion of body; *b*, ischiomerall articulation of left raptorial claw; *c*, last abdominal somite, telson, and uropod; *d*, outline of telson in ventral view; *e*, basal prolongation of uropod, ventral view. (Setae omitted.)

Holotype: 1 ♂, TL 17.0 mm; Pulau Bidan, Penang, Malay Peninsula [Malaysia]; Skeat Expedition, 1899; Museum of Zoology, Cambridge.

Paratypes: 1 ♂, CL 3.0 mm; 3 ♀, TL 15.8–17.3 mm; data as in holotype.

Description: Eye small, cornea subglobular, set obliquely on stalk, faintly overhanging stalk ventrolaterally; eyes extending almost to end of antennular peduncle; ocular scales erect, fused.

Antennular peduncle short, less than half as long as carapace; dorsal processes of antennular somite visible lateral to rostral plate as sharp, anteriorly-directed spines.

Antennal scale small, ovate, about $\frac{1}{4}$ carapace length; antennal

papillae not clearly visible in type-series, but at least 1 ventral papilla present.

Rostral plate triangular, slightly broader than long, without apical spine.

Carapace smooth, narrowed anteriorly, without carinae or spines.

Dactylus of claw with 16–21 teeth, antepenultimate not longer than penultimate; outer margin of dactylus flattened or slightly concave proximally, convex distally, with rounded, obtuse basal prominence; propodus fully pectinate, with 4 proximal movable spines, second smallest, remainder subequal; dorsal ridge of carpus terminating in blunt lobe; ischium almost as long as merus, with sharp subdistal spine on outer ventral surface.

Mandibular palp absent; 4 epipods present.

Lateral processes of sixth and seventh thoracic somites subtruncate, rounded anterolaterally and posterolaterally; basal segments of first 2 walking legs with inner and outer spines, last leg in male with outer spine only; eighth somite with, at most, a low obtuse tubercle on ventral midline.

Abdomen smooth, depressed, unarmed dorsally; sixth somite with small, fixed ventrolateral spine overhanging articulation of each uropod.

Telson broader than long, dorsal surface with median and 4 lateral obscure, obtuse marginal prominences; posterior armature on each side of midline, consisting of 7–10 submedian denticles, 1 movable submedian tooth, 4 fixed intermediate denticles, first and third shorter than second and fourth, 1 fixed intermediate tooth, 1 fixed lateral denticle, and the fixed lateral tooth; most teeth and denticles submarginal.

Basal segment of uropod with inner and outer carina, inner terminating in dorsal tooth; proximal segment of exopod shorter than distal, with 4 curved, movable spines on outer margin, distal spine extending past midlength of distal segment; inner distal lobe of proximal segment of exopod with 3 stiff setae; endopod slender, triangular, with strong fold on outer proximal margin; inner spine of basal prolongation longer than outer.

Color: Preserved specimens completely faded.

Measurements: Holotype, TL 17.0 mm; other measurements, in mm: carapace length, 3.1; rostral plate length, width, 2.2, 2.4; fifth abdominal somite width, 3.3; telson length, width, 2.0, 2.9.

Discussion: Although the five specimens reported here are obviously young and in very poor condition, I have no hesitation in assigning them to a new species. All specimens clearly show the distinguishing features of the genus, the ischial spine on the claw and the four fixed intermediate denticles on the telson.

Austrosquilla now contains three species. *A. osculans* (Hale) and *A. vercoi* (Hale), both redescribed by Manning (1966), occur only off Australia. *A. malayensis* differs from both other species in lacking posterolateral spines on the sixth abdominal somite and in having more than one dorsal prominence on the telson. The new species resembles

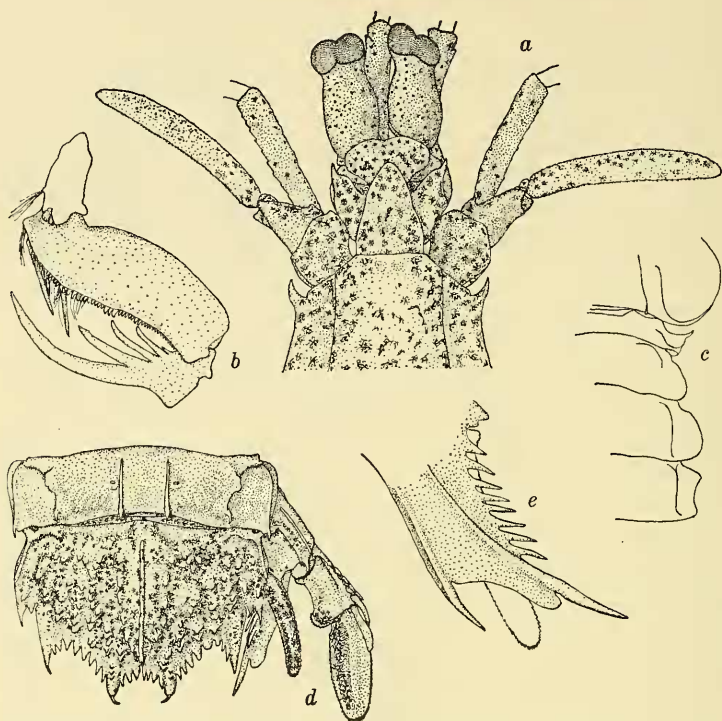


FIGURE 2. *Clorida malaccensis* new species, female holotype: *a*, anterior portion of body; *b*, carpus, propodus, and dactylus of raptorial claw; *c*, outline of exposed thoracic somites; *d*, last abdominal somite, telson, and uropod; *e*, basal prolongation of uropod, ventral view. (Setae omitted.)

A. vercoi in the large number of teeth on the claw and the triangular rostral plate, but it further differs from that species in having more submedian denticles on the telson (7–10 instead of 6) and fewer stiff setae on the inner, distal lobe of the proximal segment of the uropodal exopod (3 instead of 11).

Etymology: The name is derived from the type-locality.

***Clorida malaccensis* new species**

Figure 2

Holotype: 1 ♀, TL 55.8 mm; Strait of Malacca; November, December 1961; U. S. Navy Hydrographic Office; USNM 124769.

Description: Eye small but elongate, extending to end of first segment of antennular peduncle; stalk inflated, greatest width about half eye

length; cornea small, bilobed, broader than distal portion of stalk, cornea width slightly more than half eye length; ocular scales rounded, fused medially.

Antennular peduncle elongate, more than half as long as carapace; dorsal processes of antennular somite produced into short, sharp, anteriorly-directed spines.

Antennal peduncle elongate, first segment extending about to cornea; scale slender, curved, less than half as long as carapace.

Rostral plate longer than broad, triangular, lateral margins sinuous, converging on rounded apex.

Carapace narrowed anteriorly, lateral margin strongly concave; carapace completely lacking carinae except for marginals on posterolateral borders and anteriorly-reflected portions of marginals; posterior margin slightly concave; anterior margins of lateral plates slope posterolaterally to strong anterolateral spines which do not extend to base of rostral plate.

Raptorial claw stout; dactylus with 5 teeth, proximal very small, outer margin of dactylus with 2 lobes, proximal small, distal much larger, rectangular; dorsal ridge of carpus terminating in low tubercle.

Mandibular palp and 3-4 epipods present.

Exposed thoracic somites without submedian carinae, last 3 somites with low, inconspicuous, intermediate carinae; lateral process of fifth somite a slender spine, directed anterolaterally; fifth somite also with slender ventrolateral spine on each side; lateral processes of sixth and seventh somites rounded laterally, unarmed posteriorly; ventral keel of eighth somite low, rounded.

Abdomen broad, depressed, lacking submedian carinae on first 5 somites; abdominal carinae spined as follows: submedian, 6; intermediate, 5-6; lateral, 5-6; marginal, 6; dorsal surface of sixth somite rough, irregular, between submedian and intermediate carinae; sixth somite with sharp ventrolateral spine in front of articulation of each uropod.

Telson broader than long, with 3 pairs of sharp marginal teeth, submedians with movable apices; carinae of marginal teeth short, tuberculate dorsally; dorsal surface of telson with about 7 irregular, curved rows of tubercles and several tubercles scattered on anterior surface; denticles sharp, 3-4, 8, 1; ventral surface of telson with long, well-developed postanal keel.

Outer margin of proximal segment of uropodal exopod with 6 slender, movable spines, last not extending beyond midlength of distal segment; endopod slender, elongate; basal prolongation of uropod with 8-9 slender, fixed spines on inner margin and broad rounded lobe on outer margin of longer inner spine.

Color: Body completely covered with small, dark chromatophores arranged in no discernible pattern; uropodal endopod dark; distal fifth of proximal segment and inner half of distal segment of uropodal exopod dark.

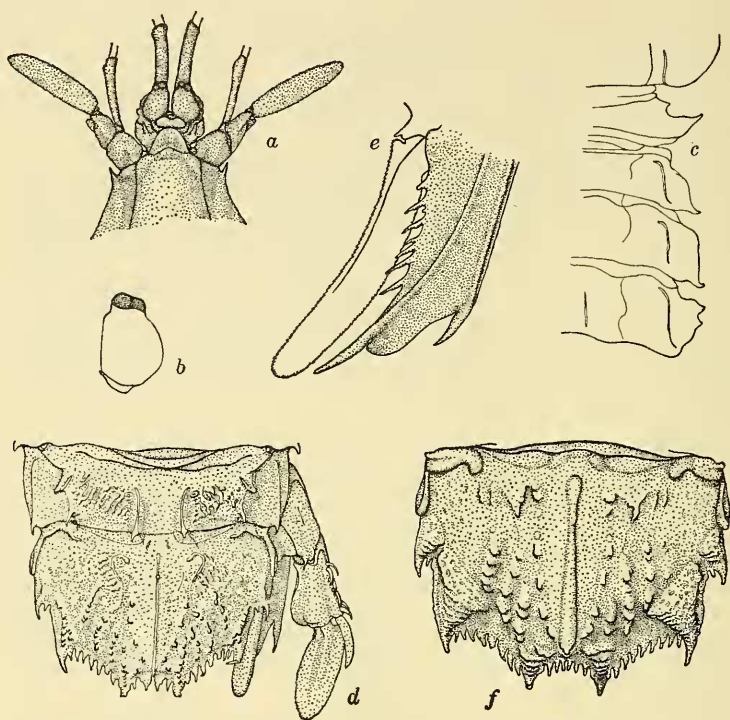


FIGURE 3. *Clorida latispina* new species, *a-e* female holotype: *a*, anterior portion of body; *b*, eye, enlarged; *c*, lateral processes of exposed thoracic somites; *d*, last abdominal somite, telson, and uropod; *e*, basal prolongation of uropod, ventral view; *f*, telson of male paratype. (Setae omitted.)

Measurements: Female holotype, TL 55.8 mm. Other measurements, in mm: carapace length, 11.7; cornea width, 1.5; eye length, 2.9; stalk width, 1.4; rostral plate length, width, 2.3, 1.6; fifth abdominal somite width, 14.1; telson length, width, 9.0, 12.1.

Discussion: *Clorida malaccensis* resembles both *C. microphthalmia* (H. Milne-Edwards) and *C. chlorida* (Brooks), and it would key out to the couplet containing those two species in the key provided by Manning (1968). It differs from both in (a) color pattern, for neither of the other two species has a pattern in which the body is completely covered with small chromatophores; (b) in having a large prominent lobe on the outer margin of the dactylus of the claw; (c) in eye shape (see below); and (d) in having tubercles on the sixth abdominal somite

between the submedian and intermediate carinae. In addition, the postanal keel in *C. malaccensis* is more prominent than in either of the two other species. The shape of the claw will distinguish *C. malaccensis* from all other species in the genus.

The eye of *C. microphthalma* differs in that the mesial margins are not as convex as in *C. malaccensis*. The cornea is much smaller in *C. microphthalma* ($\frac{2}{3}$ greatest stalk width) than in *C. malaccensis* (subequal to stalk width).

It seems likely that one of the epipods on the holotype has been lost and that normally four are found on each side.

The unusually-shaped claw of *C. malaccensis* resembles that found in *Acanthosquilla multifasciata* (Wood-Mason), and a similar lobe on the dactylus is found on males of some species of *Harpiosquilla*. The hairs on the propodus and the peculiarly-shaped dactylus may both be features which differ in males and females.

Etymology: The name is derived from the type-locality.

***Clorida latispina* new species**

Figure 3

Chloridella chlorida.—Lanchester, 1901, p. 554 [not *C. chlorida* (Brooks, 1886)].

?*Squilla latreillei*.—Serène, 1952, text fig. 15, pl. 1 (Fig. 4) [part].

Holotype: 1 ♀, TL 61.7 mm; China Sea, off Hongkong; 21°44' N, 114°48' E; *Albatross* Sta. 5303; 34 fms; black mud; 9 August 1908; USNM 77929.

Paratype: 1 ♂, TL 77.1 mm; Khota Bharu, Kelantan, Malay Peninsula, [Malaysia]; *Skeat* Expedition, 1899; Museum of Zoology, Cambridge.

Description: Eye small, not extending to middle of first segment of antennular peduncle; stalk inflated, width almost $\frac{3}{4}$ eye length; mesial margin of stalk straight, outer margin convex; cornea very small, bilobed, set obliquely on stalk, width $\frac{1}{2}$ stalk width; ocular scales small, fused into a rounded plate in male, a bilobed plate in female.

Antennular peduncle elongate, longer than carapace and rostral plate combined; dorsal processes of antennular somite visible lateral to rostral plate as small anterolaterally-directed spines.

Antennal peduncle elongate, first segment extending well beyond eye; antennal scale slender, curved, length less than $\frac{1}{2}$ carapace length.

Rostral plate short, rounded anteriorly, length $\frac{1}{2}$ greatest width or less.

Carapace strongly narrowed anteriorly, lateral margins concave, median and intermediate carinae completely absent; posterior fourth of carapace with sharp reflected portions of marginal carinae; posterior portion of lateral carinae present in female, represented by longitudinal swelling in male; posterior margin of carapace concave; anterior margins of lateral plates sloping posterolaterally to well-developed anterolateral spines which do not extend to base of rostral plate.

Raptorial claw stout; dactylus with 5 teeth, outer margin of dactylus convex or flattened, with basal notch; propodus of females with long hairs proximally; dorsal ridge of carpus terminating in low spine.

Mandibular palp and 4 epipods present.

Exposed thoracic somites with faint submedian carinae on eighth somite only; last 3 somites with well-developed intermediate carinae, unarmed posteriorly; lateral process of fifth thoracic somite a short, slender spine directed anterolaterally; fifth somite also with small ventrolateral spine on each side; lateral processes of sixth and seventh somites not bilobed, obliquely truncate, each with posterolateral spine; anterolateral margin of process of seventh somite more angular than that of sixth; median ventral keel of eighth somite an inconspicuous tubercle.

Abdomen broad, depressed, first 5 somites each with submedian carinae, carinae divergent on each somite; abdominal carinae spined as follows: submedian, 6; intermediate, 5-6; lateral, 5-6; marginal, 3-5; dorsal surface of sixth somite between submedian and intermediate carinae rough, irregular, with several short, oblique swollen ridges; sixth somite with ventrolateral spine in front of articulation of each uropod.

Telson broader than long, with 3 pairs of sharp marginal teeth, submedians with movable apices; prelateral lobes present; dorsal surface irregular, with minute pits and tubercles; denticles sharp, 2-3, 7-8, 1; ventral surface ornamented with sharp postanal keel only; dorsal sculpture of telson differing in male and female as noted below.

Telson of male: Length about $\frac{1}{2}$ greatest width; median carina inflated; each marginal tooth with tuberculate basal swelling, those of intermediate teeth largest; each side of dorsal surface with longitudinal row of tubercles converging under apex of median carina and 3 curved, inflated rows of tubercles between the submedian and intermediate teeth; fourth row, at level of intermediate teeth, indicated on 1 side; median third of telson, anterior to notch in median carina, with swollen patch of tubercles.

Telson of female: Length about $\frac{3}{4}$ greatest width; median carina sharp; bases of marginal teeth tuberculate but not inflated; dorsal carina of prelateral lobe sharp; each side of dorsal surface with longitudinal row of sharp tubercles converging under apex of median carina and 3 curved rows of sharp tubercles between submedian and intermediate teeth; median third of telson, anterior to notch in median carina, with U-shaped carinae, open posteriorly.

Outer margin of proximal segment of uropodal exopod with 7 slender movable spines, last not extending to midlength of distal segment; proximal segment of uropodal exopod shorter than distal, with short longitudinal dorsal carina; endopod slender, curved; basal prolongation with 7-8 slender fixed spines on inner margin and broad rounded lobe on outer margin of longer inner spine; basal segment with spine (female) or angular projection (male), on proximal inner margin at articulation of endopod.

Color: Completely faded in both preserved specimens.

Measurements: Male paratype, TL 77.1 mm; female holotype, TL 61.7 mm. Other measurements of male, in mm: carapace length, 13.3; cornea width, 0.9; eye length, 2.4; stalk width, 1.8; rostral plate length, width, 1.4, 2.5; fifth abdominal somite width, 17.3; telson length, width, 12.3, 15.4.

Discussion: *C. latispina* is most closely related to *C. bombayensis* (Chhapgar and Sane) described in 1967 and based on a series of four females taken in shallow water off Bombay, India. Both *C. latispina* and *C. bombayensis* can be distinguished from all other species in the genus by the presence of the posterolateral spines on the lateral processes of the sixth and seventh thoracic somites. *C. decorata* Wood-Mason also has spines on these lateral processes, but in that species the anterolateral angles of the lateral processes are armed rather than the posterolateral angles.

C. latispina differs from *C. bombayensis* as follows: (a) the spines of the dorsal processes of the antennular somite are smaller; (b) the rostral plate is rounded anteriorly, not triangular; (c) the lateral process of the fifth thoracic somite is slenderer, smaller, and not strongly curved anteriorly; (d) submedian carinae are present on the eighth thoracic somite but not on the seventh; and (e) the area between the submedian and intermediate carinae on the sixth abdominal somite is sculptured rather than smooth.

In his redescription of *C. depressa* (Miers), Serène (1952, text fig. 15, pl. 1, fig. 4) figured a specimen from the Australian Museum collection which he identified as *C. latreillei*. The specimen may be referable to either *C. bombayensis* or *C. latispina*, for the posterolateral spines on the lateral processes of the sixth and seventh thoracic somites are clearly shown in the figures. However, it may also represent a distinct species, for in text fig. 15 submedian carinae are shown on the sixth, seventh, and eighth thoracic somites rather than on the eighth only as in *C. latispina*, or the seventh and eighth, as in *C. bombayensis*.

One of the specimens identified as *C. microphthalmia* and figured by Serène (1952, text fig. 17) in the same paper may represent still another distinct species, for it also has posterolateral spines on the lateral processes of the sixth and seventh thoracic somites and apparently lacks submedian carinae on the thorax as well.

As in some other species of *Clorida*, the telsons of adult males and females have markedly different appearances. To illustrate these differences, telson of both sexes, are shown in Figure 3. In addition the female differs from the male in having numerous straight hairs on the proximal portion of the propodus of the claw.

In the key to the species of *Clorida* published by me in 1968, *C. latispina* would key out to *C. bombayensis*.

Etymology: The name refers to the spinose lateral processes of the sixth and seventh thoracic somites.

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